

## ABSTRACT

The invention provides a compact laser light source whose wavelength can be designed freely in a wavelength band in which the semiconductor laser has not been put to practical use by combining an efficient nonlinear optical crystal and high-power semiconductor lasers for optical communication. In one embodiment, the laser light source includes: a first laser for generating a laser beam of a wavelength  $\lambda_1$ ; a second laser for generating a laser beam of a wavelength  $\lambda_2$ ; and a nonlinear optical crystal that allows the laser beam of wavelength  $\lambda_1$  and the laser beam of wavelength  $\lambda_2$  as inputs and outputs a coherent beam having a wavelength  $\lambda_3$  of a sum frequency that satisfies a relationship of  $1/\lambda_1 + 1/\lambda_2 = 1/\lambda_3$ . The wavelength  $\lambda_3$  of the sum frequency is  $589.3 \pm 2$  nm that is equivalent to the sodium D line.